ATTACHMENT B

PERFORMANCE WORK STATEMENT

FAA Crew Resource Management (CRM) Flight Inspection Program

Revision
July 9, 2009

PERFORMANCE WORK STATEMENT
FAA Crew Resource Management (CRM)
Flight Inspection Program

1.0 GENERAL

1.1 Requiring Office: Federal Aviation Administration (FAA), Aviation System Standards (AVN), Flight Inspection Operations Divisions, AVN-200.

1.1.1 Task Name: Crew Resource Management

1.1.2 FAA Contracting Officer's Technical Representative (COTR):
(To be assigned in writing upon award by Contracting Officer
TBD)
Program Management Team
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1.2 INTRODUCTION

Investigations into the causes of air carrier accidents have shown that human error is a contributing factor in 60 to 80 percent of all air carrier incidents and accidents. Long-term NASA research has demonstrated that these events share common characteristics. Many problems encountered by flight crews have very little to do with the technical aspects of operating in a multi-person cockpit. Instead, problems are associated with poor group decision-making, ineffective communication, inadequate leadership, and poor task or resource management. Pilot training programs historically focused almost exclusively on the technical aspects of flying and on an individual pilot's performance; they did not effectively address crew management issues that are also fundamental to safe flight.

The Federal Aviation Administration, Aviation System Standards (AVN), Training Sub team has been tasked to provide standardization of Crew Resource Management (CRM) training and evaluation in all areas of technical training and flight operations. FAA requires contractor support to meet these requirements, since the demand for these services exceeds the resources of AVN.

1.2.1 Advisory Circular (AC) 120-51E Crew Resource Management Training presents guidelines for developing, implementing, reinforcing, and assessing crew resource management (CRM) training for flight crewmembers and other personnel essential to flight safety. CRM training is designed to become an integral part of training and operations.

1.2.2 CRM is not a one-time inoculation for flight crew personnel and must be reinforced through recurrent training, evaluation and regular course updates. It is critical that CRM training be provided to address flight safety issues.

1.2.3 The result of this process is a recurrent training and evaluation program that is routinely updated utilizing information and incidents reported during the previous year. Training can then be focused on the areas that are most in need of improvement and prevent expending valuable training resources on areas where flight crew personnel have been evaluated as effective. Information and data gathered during the year will be used to enhance and/or improve all training courses/classes presented in the future.

1.3 SCOPE

This Performance Work Statement (PWS) details the support required to establish the FAA CRM training/evaluation Program. The contractor will develop and present a recurrent training course that meets the requirements of Flight Inspection Crew Resource Management (Course number 12065) as required in FAA Order 4040.9. This course is subject to the approval of National Flight Program Oversight Office (ASW-280) as provided in FAA Order 4040.9. This course is designed to meet Advisory Circular 120-51E guidelines and reinforce the CRM skills used by flight inspection personnel. The course reviews and emphasizes decision-making, effective communications, situational awareness, and interpersonal skills as applied to flight inspection. It addresses AVN organizational factors and stresses improved crew coordination and performance, and the appropriate use of all available resources in flight inspection operations. The course will be updated each year and delivered each year with an option for delivery every other year at the discretion of the Flight Inspection Director of Operations. This contract will cover the initial base year with up to four (4) additional one-year options. Option years will be exercised at the discretion of the Flight Inspection Director of Operations. (See CDRL A002)

1.3.1 CRM Recurrent Training will normally be delivered at AVN Flight Inspection Field Offices located in Atlantic City, Anchorage, Atlanta, Battle Creek, Sacramento, and Oklahoma City. Training for the Anchorage office may be conducted via video conferencing. The FAA may need course presentation at substitute facilities if necessary. Course development and currency/revision related services will normally be performed at the contractor's facilities. Up to three classes will be given during the stated period on three consecutive days with a maximum of 25 students per class. The FAA will make every effort to provide a projected number of students per period six weeks prior to the presentation period for the base year and 60 days for all option years. Classes will not be held on Federal Holidays. At the discretion of the Training Manager, recurrent CRM courses will be taught solely by the contracted service provider, Flight Inspection training staff or a combination of the two.

1.3.2 Travel requirements related to performance of any task defined in this PWS shall be coordinated, scheduled, and approved in advance of actual travel performance by written authorization from the Contracting Officer as coordinated with the Training Manager and the Contracting Officers Technical Representative (COTR). The method of travel, length of stay, and contractor personnel required will be determined and approved by the Contracting Officer

on a trip-by-trip basis considering the work to be performed. The contractor shall also provide a realistic cost estimate for all travel related reimbursable cost to the COTR for approval prior to travel performance. All travel, per diem and any other costs related to travel shall be reimbursed in accordance with United States Federal Travel Regulations. All travel arrangements will be made no later than 2-weeks prior to scheduled class dates.

1.3.3 Technical reviews of course related materials will be required by the Training Manager or COTR. The reviews will be conducted by the Training Manager and may include discussions of course content, work performed, currency, problem areas, unfinished business, and plans. The contractor will have 14 days to respond back to the Training Manager with corrected discrepancies. (See CDRL A001)

1.3.4 Course instructors/developers may be required to accompany flight crews for familiarization. Requirements for familiarization flights shall be approved by the contracting officer and coordinated with the Training Manager or COTR prior to performance. Flight-line security passes for contractor personnel shall be coordinated by the COTR or Training Manager. Travel and per diem for familiarization flights shall be billed under Contract Line Item Number (CLIN) 4.0. Maximum of two (2) familiarization flights will be provided to the contractor, with contractor's flight time labor cost to be billed under CLIN 21.0.

1.3.4.1 Contractor shall have in place an established course in aircraft Crew Resource Management specific to aircrew training. Instructor/developers shall have at least 2 years practical experience in adult education and at least 5 years of experience as a flight crewmember in a crew aircraft environment.

1.3.5 FAA provided Course and Instructor critique sheets will be given to each student for completion at the conclusion of each class. The contractor shall forward the critiques and a class attendance roster to the COTR within 5 working days of class completion. Computerized data collection my be utilized in lieu of paper at the discretion of the FAA. (CDRL-A002)

1.4 Government Furnished Services

The Government will furnish a suitable environment including appropriate equipment for course/class delivery. The Government will identify a Contracting Officer's Technical Representative (COTR) within AVN for coordination, scheduling, and approval of requirements defined in this PWS. The COTR will provide information to the contractor that will facilitate course development, maintaining currency, evaluation, and delivery.

1.5 Requirements

The contractor will develop and present a 4-hour recurrent training course for approximately 165 crewmembers that meets the requirements of Flight Inspection Crew Resource Management (Course number 12065) as required in FAA Order 4040.9. Classes will consist of 50 minutes of instruction followed by a 10-minute break. This course is designed to meet Advisory Circular 120-51E guidelines and reinforce the CRM skills used by flight inspection personnel. The course reviews and emphasizes decision-making, effective communications, situational

awareness, and interpersonal skills as applied to flight inspection. It addresses AVN organizational factors and stresses, improved crew coordination and performance, and the appropriate use of all available resources in flight inspection operations. This course is subject to the approval of ASW-280 as provided in FAA Order 4040.9. The draft curriculum will be submitted to the Training Manager within 30 days of contract initiation so that ASW-280 approval may be obtained. The CRM recurrent class will be updated on a continuing basis to incorporate changes within industry and AVN operations. The course content will be developed using FAA Advisory Circular 120-51 (as amended) for guidance. The course will primarily focus on low altitude operations and critical phases of flight as they relate to flight inspection operations. The course will address the CRM aspects related to flight inspection maneuvers outlined in Technical Issuance (TI) 8200.52. These topics will include, but not be limited to, Instrument Landing System 1, 2 & 3 profiles, Navaid coverage profiles, clearance below path profiles, precision & non-precision approaches, opposite direction approach operations, day and night operations at high-density airports, low altitude night operations, high-density uncontrolled airfield operations and operations in mountainous terrain. It will also contain a study of prior aviation accidents using released cockpit voice recorder and flight data recorder information to study crew interaction and to identify whether CRM was a contributing factor. This area of the curriculum will be updated on an annual basis. Once developed the vendor provides to the FAA an unlimited use license to all course content and materials for use only within the FAA. (See CDRL A002)

1.5.1 Prior to presentation of a CRM course, the contractor shall provide a copy of any changes to the course materials to the Training Manager or COTR for review at least 30 days prior to scheduled training.

1.5.2 The COTR will coordinate each CRM class (presentation dates, locations, number of students, etc.) with the contractor. The contractor shall also provide the COTR realistic cost estimate(s) for travel in accordance with this PWS.

1.5.3 The preliminary schedule for base year recurrent training is listed below at the specified locations. The Training Manager will make every effort to provide any changes to this schedule no later than 30 days prior to scheduled training. If the contract award date is delayed, class dates will need to be determined by mutual agreement between the FAA and contractor after contract award. The specific days and times during these weeks that the training is to be conducted should be provided by the Training Manager no later than 30 days prior to scheduled training. The Training Manager will make every effort to provide dates and times for training during subsequent years no later than 30 days prior to scheduled training.

LOCATION	DATE	Estimated Students
Oklahoma City, OK	1 – 4 September 2009	29 students
Atlantic City, NJ	21 – 25 September 2009	18 students
Battle Creek, MI	28 September – 2 October 2009	21 students
Oklahoma City, OK	5 – 9 October 2009	28 students
Sacramento, CA	13 – 16 October 2009	18 students
Atlanta, GA	26 – 30 October 2009	23 students
Oklahoma City, OK	2 – 6 November 2009	28 students

1.5.3.1 Cost and Pricing, for a 165 FAA CRM Student population shall include:
1 instructor
Instructors guide (Lesson plans, Support Materials, Audio/visual, etc,)
Student workbooks (course outline, objectives for each block of instruction) and transportation cost of sending course materials to each site.
Attendance Sheet
Course and Instructor critique sheets (Format provided by FAA)
Examinations (multiple-choice questions, five questions per hour of instruction)

1.5.5 Performance of this requirement shall be coordinated and scheduled with the Contracting Officer with coordination of the Training Manager or COTR prior to performance. The contractor shall also provide the COTR realistic cost estimate(s) for travel.

1.5.6 The course should contain the suggested curriculum topics listed in Advisory Circular 120-51(as amended). These topics include, but are not limited to:

1.5.6.1 Communications Processes and Decision Behavior. This topic includes internal and external influences on interpersonal communications. External factors include communication barriers such as rank, age, gender, and organizational culture, including the identification of inadequate Standard Operating Procedures. Internal factors include speaking skills, listening skills and decision-making skills, conflict resolution techniques, and the use of appropriate assertiveness and advocacy. The importance of clear and unambiguous communication must be stressed in all training activities. The greater one's concern in flight-related matters, the greater is the need for clear communication. Subtopics that are more specific include the following:

1.5.6.1.1 **Briefings.** Training in addressing both operational and interpersonal issues, and training in establishing and maintaining open communications. A captain's briefings should reaffirm established SOPs and should address the most threatening safety and security situations.

1.5.6.1.1.1 **Safety.** A captain's briefing should address emergencies that might require an airplane evacuation (e.g., cabin fire or engine fire) and should highlight the functions of flight crew during an evacuation.

1.5.6.1.1.2 **Security.** A captain's briefing should address general security topics, especially hijack, and any known or suspected specific threat pertaining to the flight.

1.5.6.1.2 Inquiry/Advocacy/Assertion. Training in the potential benefits of crewmembers advocating the course of action that they feel is best, even though it may involve conflict with others.

1.5.6.1.3 Crew Self-Critique (Decisions and Actions). Illustrating the value of review, feedback, and critique focusing on the process and the people involved. One of the best

techniques for reinforcing effective human factors practices is careful debriefing of activities, highlighting the processes that were followed. Additionally, it is essential that each crewmember be able to recognize good and bad communications, and effective and ineffective team behavior.

1.5.6.1.4 **Conflict Resolution.** Demonstrating effective techniques of resolving disagreements among crewmembers in interpreting information or in proposing courses of action. Demonstrating effective techniques for maintaining open communication while dealing with conflict.

1.5.6.1.5 **Communications and Decision-making.** Demonstrating effective techniques of seeking and evaluating information. Showing the influence of biases and other cognitive factors on decision quality. There are benefits in providing crews with operational models of this group decision process. Crews may refer to these models to make good choices in situations when information is incomplete or contradictory.

1.5.6.2 Team Building and Maintenance

1.5.6.2.1 **Leadership/Followership/Concern for Task.** Showing the benefits of the practice of effective leadership through coordinating activities and maintaining proper balance between respecting authority and practicing assertiveness. Staying centered on the goals of safe and efficient operations.

1.5.6.2.2 **Workload Management and Situation Awareness.** Stressing the importance of maintaining awareness of the operational environment and anticipating contingencies. Instruction may address practices (e.g., vigilance, planning and time management, prioritizing tasks, and avoiding distractions) that result in higher levels of situation awareness. The following operational practices may be included:

1.5.6.2.2.1 **Preparation/Planning/Vigilance.** Issues include methods to improve monitoring and accomplishing required tasks, asking for and responding to new information, and preparing in advance for required activities.

1.5.6.2.2.2 **Workload Distribution/Distraction Avoidance.** Issues involve proper allocation of tasks to individuals, avoidance of work overloads in self and in others, prioritization of tasks during periods of high workload, and preventing nonessential factors from distracting attention from adherence to SOPs, particularly those relating to critical tasks.

1.5.6.2.3 **Individual Factors/Stress Reduction.** Training in this area may include describing and demonstrating individual characteristics that can influence crew effectiveness. Research has shown that many crewmembers are unfamiliar with the negative effects of stress and fatigue on individual cognitive functions and team performance. Training may include a review of scientific evidence on fatigue and stress and their effects on performance. The content may include specific effects of fatigue and stress in potential emergency situations. The effects of personal and interpersonal problems and the increased importance of effective interpersonal communications under stressful conditions may also be addressed. Training may also include

familiarization with various countermeasures for coping with stressors. Additional curriculum topics may include examination of personality and motivation characteristics, self-assessment of personal style, and identifying cognitive factors that influence perception and decision-making.

1.5.6.3 Theory and practice in using communication, decision-making, and team building techniques and skills

1.5.6.4 Theory and practice in using proper supervision techniques (i.e., PIC's working with new SIC's)

1.5.6.5 Theory and practice in selecting and using interventions needed to correct flying errors made by either pilot, especially during critical phases of flight. These interventions may include, but not be limited to, communication, assertion, decision-making, risk assessment, and situation awareness skills.

1.5.6.6 Training for new first officers in performing the role of the pilot monitoring (PM) to establish a positive attitude toward monitoring and challenging errors made by the pilot flying (PF). Training should stress that appropriate questioning is encouraged as a desirable CRM behavior, and that there will be no negative repercussions for appropriate questioning of one pilot's decision or action by another pilot.

1.5.6.7 Training for captains in giving and receiving challenges of errors. Training should stress that appropriate questioning is encouraged as a desirable CRM behavior, and that there will be no negative repercussions for appropriate questioning of one pilot's decision or action by another pilot.

1.5.6.8 Information about the detrimental effects of fatigue and strategies for avoiding and countering its effects.

1.5.6.9 Training for crewmembers that identify conditions in which additional vigilance is required, such as holding in icing or near convective activity. Training should emphasize the need for maximum situation awareness and the appropriateness of sterile cockpit discipline, regardless of altitude.

1.5.6.10 Training that identifies appropriate levels of automation to promote situation awareness and effective management of workload.

1.5.6.11 Use of autopilot in in-flight icing-- All flight crewmembers should clearly understand their aircraft's susceptibility to in-flight icing and should monitor in-flight ice accretion available. One effective means of monitoring ice accretion might be to disconnect the autopilot at intervals, if doing so is consistent with the approved procedures contained in the airplane flight manual.

1.5.6.12 Training for all crewmembers that contains a controlled flight into terrain scenario-- emphasis should be on prevention through effective communication and decision behavior. The importance of immediate, decisive, and correct response to a ground proximity warning should also be addressed.

1.5.6.13 Training for all crewmembers in recognizing cues that indicate lack or loss of situation awareness in themselves and in others, and training in countermeasures to restore that awareness. Training should emphasize the importance of recognizing each crewmember's relative experience level, experience in specific duty positions, preparation level, planning level, normal communication style and level, overload state, and fatigue state. Crewmembers should assess these characteristics actively and continuously, in their fellow crewmembers and in themselves. Training should also emphasize the importance that improper procedures, adverse weather, and abnormal or malfunctioning equipment may have in reducing situation awareness.

1.5.6.14 A clear message that appropriate questioning among crewmembers is a desirable CRM behavior and part of the corporate safety culture; further, that such questioning is encouraged, and that there will be no negative repercussions for appropriate questioning of one crewmember's decision or action by another crewmember.